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EXAMINER

BATTAGLIA, MICHAEL V

ART UNIT PAPER NUMBER

2652

DATE MAILED: 04/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/994,693

Applicant(s)

JEONG ET AL.

Examiner

Michael V Battaglia

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 December 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 and 21-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 and 21-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 June 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on October 25, 2004 has been entered.

Claim Objections

2. Claims 1, 10 and 21 and therefore claims 2-5, 11-15, 22 and 23 are objected to because of the following informalities:

- a. On line 1 of claim 1, replacing "comprising;" with -comprising;- is suggested.
- b. On line 5 of claim 10, replacing "opening ;" with -opening;" is suggested.
- c. On line 9 of claim 21, replacing "said opening" with -an opening- is suggested to avoid improper antecedent basis issues.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this

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subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 10, 11, 16, 17 and 21 are rejected under 35 U.S.C. 102(e) as being anticipated by Oochida et al (hereafter Oochida) (US 6,584,060).

In regard to claim 10, Oochida discloses an optical pickup device (Fig. 15), comprising: a lead frame package (Fig. 16, element 121 and Col. 22, lines 3-22) having a sub-mount (portion of Fig. 16, element 121 to which the light source (element 11) is mounted), a light source (Fig. 15, element 11) mounted on the sub-mount to emit a laser beam, a reflective element to direct said beam onto an optical medium (Fig. 11, element 101 and Col. 21, lines 35-37), and a hologram optical element (Fig. 15, element 55) to diffract said beam reflected from said optical medium onto a diffraction path, said lead frame package having an opening (Fig. 16, opening at which element 31 is disposed); and a detecting unit (Fig. 15, element 31) having a substrate and a photo detector mounted on said substrate (Figs. 1B and 14B show embodiments of element 31 and both include a photodetector (Figs. 1B and 1E, element 39 and Fig. 14B, elements 31a-31c) mounted on a substrate (Fig. 1B, element 31 not including elements 37 and 39 and Fig. 14B, element 31 not including elements 31a-31c)), wherein said substrate located external to said lead same package (Fig. 16) and said photo detector positioned in the diffraction path to directly receive diffracted beams from the hologram optical element (Fig. 15). It is noted that Oochida discloses integrating the optical pickup device embodiment of Fig. 15 in one chassis to form a cell structure (Col. 22, lines 3-6) and provides Fig. 16 as an example of how a different optical pickup device embodiment is integrated in one chassis that shows the light source mounted to the sub-mount of the lead frame package and the photodetector substrate located external to the lead frame package (Fig. 16).

In regard to claim 11, Oochida discloses that said detecting unit is disposed at said opening of said lead frame package (Fig. 16), said detecting unit fixed to said lead frame package (Col. 22, lines 3-6). It is noted that the detecting unit is fixed to the lead frame package for the detecting unit to be integrated with the lead frame package (Col. 22, lines 3-6).

In regard to claim 16, Oochida discloses an optical pickup device (Fig. 15), comprising: a lead frame package (Fig. 16, element 121 and Col. 22, lines 3-22) having a sub-mount (portion of Fig. 16, element 121 to which the light source (element 11) is mounted), a light source (Fig. 15, element 11) mounted on said sub-mount and emitting a laser beam which is incident to and reflected from an optical medium (Fig. 11, element 101 and Col. 21, lines 35-37), and a hologram optical element (Fig. 15, element 55) diffracting said beams reflected from said optical medium onto a diffraction path, said lead frame package having an opening (Fig. 16, opening at which element 31 is disposed); and a detecting unit (Fig. 15, element 31) having a substrate and a photo detector mounted on said substrate (Figs. 1B and 14B show embodiments of element 31 and both include a photodetector (Figs. 1B and 1E, element 39 and Fig. 14B, elements 31a-31c) mounted on a substrate (Fig. 1B, element 31 not including elements 37 and 39 and Fig. 14B, element 31 not including elements 31a-31c)), wherein said substrate located external to said lead frame package (Fig. 16) and said photo detector is positioned in the direction path such that the photo detector directly receives diffracted beams from the hologram optical element (Fig. 15). It is noted that Oochida discloses integrating the optical pickup device embodiment of Fig. 15 in one chassis to form a cell structure (Col. 22, lines 3-6) and provides Fig. 16 as an example of how a different optical pickup device embodiment is integrated in one chassis that shows the light source mounted to the sub-mount of the lead frame package and the photodetector substrate located external to the lead frame package (Fig. 16).

In regard to claim 17, Oochida discloses that said detecting unit is disposed at said opening of said lead frame package (Fig. 16), said detecting unit fixed to said lead frame package after being moved to a position to receive said beams diffracted from said hologram optical element (Col. 22, lines 3-6). It is noted that the detecting unit is fixed to the lead frame package for the detecting unit to be integrated with the lead frame package (Col. 22, lines 3-6). Also, because the detecting unit is located a position to receive beams diffracted from said hologram optical element (Fig. 15), it is inherent that the detecting unit was moved to that position before being fixed to (integrated with) the lead frame package.

In regard to claim 21, Oochida discloses a process for manufacturing an optical pickup device (Fig. 15), comprising the steps of: providing a lead frame package (Fig. 16, element 121 and Col. 22, lines 3-22) having a sub-mount (portion of Fig. 16, element 121 to which the light source (element 11) is mounted), a light source (Fig. 15, element 11) mounted said sub-mount and emitting a laser beam which is incident to and reflected from an optical medium (Fig. 11, element 101 and Col. 21, lines 35-37), and a hologram optical element (Fig. 15, element 55) diffracting said beams reflected from said optical medium onto a diffraction path; providing a detecting unit (Fig. 15, element 31) having a substrate and a photo detector mounted on said substrate (Figs. 1B and 14B show embodiments of element 31 and both include a photodetector (Figs. 1B and 1E, element 39 and Fig. 14B, elements 31a-31c) mounted on a substrate (Fig. 1B, element 31 not including elements 37 and 39 and Fig. 14B, element 31 not including elements 31a-31c)), said substrate is located external to said lead frame package; locating said detecting unit at an opening (Fig. 16, opening at which element 31 is located) of said lead frame package; moving said detecting unit with respect to said lead frame package into the diffraction path such that the photo detector directly receives diffracted beam from the hologram optical element (Fig. 15); and fixing said

detecting unit to said lead frame package (Col. 22, lines 3-6). It is noted that Oochida discloses integrating the optical pickup device embodiment of Fig. 15 in one chassis to form a cell structure (Col. 22, lines 3-6) and provides Fig. 16 as an example of how a different optical pickup device embodiment is integrated in one chassis that shows the light source mounted to the sub-mount of the lead frame package and the photodetector substrate located external to the lead frame package (Fig. 16).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 5-7, 10, 11 and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Imai in view of Oochida.

In regard to claim 1, Imai discloses an optical pickup device (Figs. 6 and 7), comprising; a lead frame package (Fig. 6, element 40) having a sub-mount (Fig. 6, element on which element 41 is mounted), a laser source (Figs. 6 and 7, element 41) mounted on said sub-mount to emit a laser beam, a reflective element (Figs. 6 and 7, element 42) to reflect said beam onto a first path directly toward a transmission-type refraction grating (Figs. 6 and 7, element 47), the transmission-type diffraction grating is for dividing said beam into a plurality of beams including a main beam and two sub beams (Col. 22, lines 29-49), which are incident to an optical medium (Fig. 7, element 11), and a hologram optical element (Figs. 6 and 7, element 48) to diffract the beams reflected from an

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optical medium onto a second path, said lead frame package having an opening (Fig. 6); and a detecting unit (Figs. 6 and 7, element 44) having a substrate (Fig. 7, element 44 excluding elements A1-A4, B and C) and a photo detector (Fig. 7, elements A1-A4, B and C) mounted on said substrate, wherein said photo detector positioned in the second path to directly receive diffracted beams from the hologram optical element (Figs. 6 and 7).

In regard to claim 6, Imai discloses an optical pickup device (Figs. 6 and 7), comprising: a lead frame package (Fig. 6, element 40) having a sub-mount (Fig. 6, element on which element 41 is mounted), a light source (Figs. 6 and 7, element 41) mounted on said sub-mount and emitting a laser beam, a transmission-type diffraction grating element (Figs. 6 and 7, element 47) dividing said beam into a main and two sub beams, which are incident to an optical medium (Fig. 7, element 11), and a hologram optical element (Figs. 6 and 7, element 48) diffracting said beams reflected from said optical medium onto a diffraction path, said lead frame package having an opening (Fig. 6); and a detecting unit (Figs. 6 and 7, element 44) having a substrate (Fig. 7, element 44 excluding elements A1-A4, B and C) and a photo detector (Fig. 7, elements A1-A4, B and C) mounted on said substrate, wherein said photo detector is positioned in the diffraction path such that the photo detector directly receives diffracted beams from the hologram optical element (Figs. 6 and 7).

In regard to claim 10, Imai discloses an optical pickup device (Figs. 6 and 7), comprising: a lead frame package (Fig. 6, element 40) having a sub-mount (Fig. 6, element on which element 41 is mounted), a light source (Figs. 6 and 7, element 41) mounted on the sub-mount to emit a laser beam, a reflective element (Figs. 6 and 7, element 42) to direct said beam onto an optical medium (Fig. 7, element 11), and a hologram optical element (Figs. 6 and 7, element 48) to diffract said beam reflected from said optical medium onto a diffraction path, said lead frame package having an opening (Fig. 6); and a detecting unit (Figs. 6 and 7, element 44) having a substrate (Fig. 7,

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element 44 excluding elements A1-A4, B and C) and a photo detector (Fig. 7, elements A1-A4, B and C) mounted on said substrate, wherein said photo detector positioned in the diffraction path to directly receive diffracted beams from the hologram optical element (Figs. 6 and 7).

In regard to claim 16, Imai discloses optical pickup device (Figs. 6 and 7), comprising: a lead frame package (Fig. 6, element 40) having a sub-mount (Fig. 6, element on which element 41 is mounted), a light source (Figs. 6 and 7, element 41) mounted on said sub-mount and emitting a laser beam which is incident to and reflected from an optical medium (Fig. 7, element 11), and a hologram optical element (Figs. 6 and 7, element 48) diffracting said beams reflected from said optical medium onto a diffraction path, said lead frame package having an opening (Fig. 6); and a detecting unit (Figs. 6 and 7, element 44) having a substrate (Fig. 7, element 44 excluding elements A1-A4, B and C) and a photo detector (Fig. 7, elements A1-A4, B and C) mounted on said substrate, wherein said photo detector is positioned in the direction path such that the photo detector directly receives diffracted beams from the hologram optical element (Figs. 6 and 7).

Further in regard to claims 1, 6, 10 and 16, Imai does not disclose that said substrate is located external to said lead frame package. It is noted that Imai discloses that by integrating the light (laser) source, the detecting unit, and an optical element including the hologram optical element with the lead frame package, assembly of the optical pickup device is facilitated and cost and size of the optical pickup device are reduced (Col. 43, lines 19-28).

Oochida discloses a lead frame package (Fig. 16, element 121) having an opening (Fig. 16, opening at which element 31 is disposed) and a detecting unit (Fig. 16, element 31) disposed at said opening. The detecting unit has a substrate and a photo detector mounted on said substrate (Figs. 1B and 14B show embodiments of element 31 and both include a photo detector (Figs. 1B and 1E, element 39 and Fig. 14B, elements 31a-31c) mounted on a substrate (Fig. 1B, element 31

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not including elements 37 and 39 and Fig. 14B, element 31 not including elements 31a-31c)) wherein said substrate is located external to said lead frame package (Fig. 16). It is noted that in the embodiment shown in Fig. 15, said photo detector (Fig. 15, element 31) is positioned in a second path to directly receive diffracted beams from a hologram optical element (Fig. 15, element 55). It is further noted that Oochida discloses that by integrating a light (laser) source, the detecting unit, and a hologram optical element with the lead frame package, assembly of the optical pickup device is facilitated and cost and size of the optical pickup device are reduced (Col. 22, lines 3-22).

Therefore, lead frame package of Oochida was an art-recognized equivalent to the lead frame package of Imai at the time of the invention for the purpose of facilitating assembly and reducing size and cost of an optical pickup device and one of ordinary skill would have found it obvious to use either one including the lead frame package of Oochida, wherein the substrate of the detecting unit is located external to the lead frame package and wherein the detecting unit is disposed at an opening of the lead frame package, for facilitating assembly and reducing size and cost of the optical pickup device of Imai.

In regard to claims 2 and 17, Oochida discloses that said detecting unit is disposed at said opening of said lead frame package (Fig. 16), said detecting unit fixed to said lead frame package after being moved to a position to receive said beams diffracted from said hologram optical element (Col. 22, lines 3-6). It is noted that the detecting unit is fixed to the lead frame package for the detecting unit to be integrated with the lead frame package (Col. 22, lines 3-6). Also, because the detecting unit is located a position to receive beams diffracted from said hologram optical element (Fig. 15), it is inherent that the detecting unit was moved to that position before being fixed to (integrated with) the lead frame package.

In regard to claims 5 and 15, Imai in view of Oochida discloses the optical head of claims 1 and 10 having the reflective element of Imai (Fig. 6, element 42) that reflects a laser beam. Imai discloses that the reflective element is a prism that bends the optical path of a laser beam (Col. 21, lines 53-55). Fig. 6 shows the optical path bent by the reflective element by approximately 90 degrees. Imai does not disclose that the reflective element is a mirror. Imai further discloses a mirror (Fig. 5, element 32) that bends an optical path by approximately 90 degrees. A prism used for reflecting light and a mirror were art-recognized equivalents at the time of the invention for the purpose of reflecting light at approximately a 90-degree angle and one of ordinary skill would have found it obvious to use either one including a mirror for reflecting light by approximately 90 degrees at the location of the reflective element of Imai.

In regard to claims 7 and 11, Oochida discloses that said detecting unit is disposed at said opening of said lead frame package (Fig. 16), said detecting unit fixed to said lead frame package (Col. 22, lines 3-6). It is noted that the detecting unit is fixed to the lead frame package for the detecting unit to be integrated with the lead frame package (Col. 22, lines 3-6).

5. Claims 3, 8, 13 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Imai in view of Oohchida as applied to claims 1, 6, 10 and 16 above, and further in view of Barkan et al (hereafter Barkan) (US 6,637,657).

Imai in view of Oohchida discloses the optical pickup devices of claims 1, 6, 10 and 16 having a detecting unit. Imai in view of Oohchida does not disclose that the detecting unit is a chip-on-board photo diode package.

Barkan discloses that use of a chip-on-board photo diode package for a detecting unit makes the detecting unit smaller and reduces cost (Col. 6, lines 36-40).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a chip-on-board photo diode package for the detecting unit of Imai in view of Oohchida as suggested by Barkan, the motivation to reduce the size and cost of the detecting unit.

6. Claims 4, 9, 14 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Imai in view of Oohchida as applied to claims 1, 6, 10 and 16 above, and further in view of Sakakibara et al (hereafter Sakakibara) (JP 09-213989).

Imai in view of Oohchida discloses the optical pickup devices of claims 1, 6, 10 and 16 having a detecting unit. Imai in view of Oohchida does not disclose that the detecting unit is a flip-chip package.

Sakakibara discloses that use of a flip-chip package for a detecting unit reduces the size of the detecting unit (Abstract).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a flip-chip package for the detecting unit of Imai in view of Oohchida as suggested by Sakakibara, the motivation to reduce the size of the detecting unit.

7. Claims 12 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Imai in view of Oochida as applied to claim 10 above, and further in view of Kouno (US 6,404,709).

Imai in view of Oochida discloses the optical pickup device of claim 10 having the transmission-type diffraction grating element of Imai (Figs. 6 and 7, element 47) dividing a laser beam into a plurality of beams including a main and two sub beams which are incident to an optical medium and the reflecting element of Imai (Figs. 6 and 7, element 42) reflecting the laser beam on a path to the optical medium. It is noted that both the transmission-type diffraction grating element and the reflecting element are located in the lead frame package of Imai (Fig. 6,

element 40) and would also be located in the lead frame package of Oochida (Fig. 16, element 121) as combined above. Imai does not disclose that the reflecting element is a reflection-type diffraction grating element dividing said beam emitted from said light source into a plurality of beams including main and two sub beams reflected toward said optical medium.

Kouno discloses a reflection-type diffraction grating element (Fig. 1, element 15b) dividing a beam emitted from a light source (Fig. 1, element 41) into a plurality of beams including main and two sub beams reflected toward said optical medium (Col. 5, lines 15-22 and 54-57). Kouno (Col. 5, lines 15-22 and 54-57) further discloses use of the reflection-type diffraction grating element in place of transmission-type diffraction grating element (Fig. 1, element 15a) and a reflecting element (Fig. 1, element 16).

Therefore, a reflection-type diffraction grating element was an art-recognized equivalent to a transmission-type diffraction grating element with a reflecting element at the time of the invention for the purpose of separating a beam into plural beams toward the same direction and one of ordinary skill would have found it obvious to use either one including the reflection-type diffraction grating element of Kouno for separating and directing the beam of Imai in the manner suggested by Imai. It is noted that the reflection-type diffraction grating element would also be located in the lead frame package of Imai in view of Kuono.

8. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Oohchida as applied to claim 21 above, and further in view of Maeda (US 4,926,036).

Oohchida discloses the optical pickup device of claim 21 having a photo detector and the process of claim 21 including the steps of moving a detecting unit with respect to a lead frame package, and fixing the detecting unit to the lead frame package. Oohchida does not disclose monitoring a signal obtained by said photo detector during movement of said detecting unit with

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respect to said lead frame package; and fixing said detecting unit to said lead frame package when said signal is in a predetermined range.

Maeda discloses monitoring a signal obtained by a photo detector during movement of a detecting unit to put the light detector in a predetermined position or range (Col. 2, lines 29-36).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to monitor a signal obtained from the photo detector of Oohchida during movement of said detecting unit with respect to said lead frame package as suggested by Maeda; and to fix the detecting unit of Oohchida to the lead frame package when the signal is in a predetermined range, as suggested by Maeda, the motivation being to accurately position the detecting unit in a position light receiving area.

Response to Arguments

9. Applicant's arguments with respect to claims 1-19 and 21-23 have been considered but are moot in view of the new ground(s) of rejection.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael V Battaglia whose telephone number is (703) 305-4534. The examiner can normally be reached on 5-4/9 Plan with 1st Friday off.

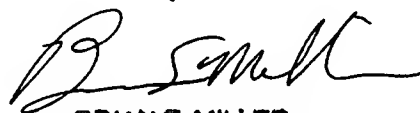
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa T Nguyen can be reached on (703) 305-9687. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Michael Battaglia



BRIAN E. MILLER
PRIMARY EXAMINER